AIR RESOURCES LABORATORY

SEMINAR

An overview of the NCEP Short Range Ensemble Forecasting (SREF) system and it's application to estimating air quality forecast uncertainty

Jeffery McQueen
NOAA-NWS-NCEP Environmental Modeling Center

Abstract

The NCEP SREF system has been run operationally since June 2001.

The SREF system was developed to provide a multiple regional model, short-range (0-3 days) ensemble prediction system that produces operationally relevant and useful guidance on the probability distribution of weather elements or events. The probabilistic information provided by SREF will help meet the NWS FY05 strategic goal of "providing probabilistic gridded products to the NWS/WFOs, service centers and other users".

In September 2003, NCEP added 5 Eta-KF (Kain-Fritsch convective parameterization) members to the routine production and evaluation of a regional model based ensemble system and product suite (Du, et al., 2003). The system consisted of 5 ETA-KF, 5 Eta-BMJ (Betts-Miller-Janic convective parameterization) and 5 RSM multi-model members, for 15 total members at 48 km horizontal resolution. SREF is run twice per day (09z and 21z) out to 63hrs; with output available every 3hrs using regional bred initial state perturbations.

Previous studies have shown the importance of multi-physics ensemble forecasts in improving SREF diversity. The upcoming implementation incorporates additional physics diversity by running various convective and cloud microphysics parameterizations along with single pair breeding, to improve system diversity and forecast spread information, especially for quantitative precipitation forecasts The system is currently comprised of 15 model members run at 32 km and run out to 63 hours, 2 times per day (09 and 21 UTC). This presentation will describe the SREF system, including perturbed initial condition generation, member configuration, model postprocess and probabilistic verification. This presentation will also discuss application of using SREF to quantify the air quality forecast uncertainty caused by meteorological forecast error.

10:30A, Wednesday, July 28, 2004
SSMC3, Rm. 3404
1315 East West Hwy, Silver Spring, MD

For more information, contact Betty Wells, 301-713-0684, x100